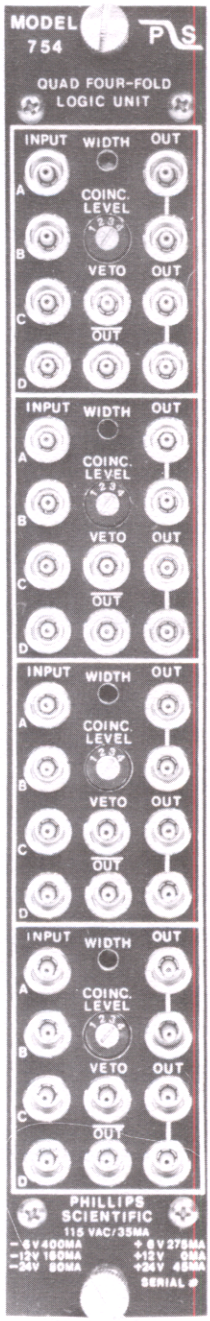
Phillips Scientific

Logic Unit

NIM MODEL 754

FEATURES

- VERSATILE LOGIC MODULE WITH MAJORITY LEVEL SELECTION
- FOUR INDEPENDENT CHANNELS
- 300 MHz RATE CAPABILITY
- DEADTIMELESS UPDATING OUTPUTS
- FAST ANTI-COINCIDENCE CAPABILITY



DESCRIPTION

The Model 754 logic unit contains four channels of four input logic with veto in a single width NIM module. Logical AND, OR, majority logic, fan-in/fan-out, and anti-coincidence functions can be performed with this versatile module. All functions are direct coupled and operate to over 300 MHz with input overlap times as narrow as 750 pSEC.

Each channel has four logic inputs, an anti-coincidence input, a coincidence level switch, and five outputs with common width control. The inputs are enabled by connecting the input cable to the desired input, eliminating errors often occuring with switched inputs. The setting of the coincidence level switch then determines whether a logical OR, AND, or majority logic function will produce an output.

After the inputs have satisfied the logic function desired, triggering of an updating regenerative stage produces a standardized output pulse, independent of the input pulse shapes or overlap times. The updating feature ensures dead-timeless operation, while the double-pulse resolution is 3.3 nSEC for fast counting applications.

The outputs are the current source type with two pairs of negative bridged outputs and one complement for each channel. When only one output of a bridged pair is used, a double-amplitude NIM pulse (−32 mA) is generated for driving long cables with narrow pulse widths. The outputs have transition times of less than 1.0 nSEC and their shapes are virtually unaffected by loading the outputs in any combination.

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INPUT CHARACTERISTICS

A, B, C, D:

Four inputs per section, LEMO connectors; accepts NIM level logic signals (−500 mV); 50 ohm input impedance DC coupled; input reflections are less than ±5% for a 1 nSEC risetime. Inputs are protected against damage from ±50 volt input transients. Inputs respond to a 750 pSEC or greater input width.

Veto:

One input per section, LEMO connector; accepts NIM level logic signal (−500 mV); 50 ohm input impedance, DC coupled; less than ±5% input reflection for a 1 nSEC risetime; protected against damage ±50 volt input transients. Requires a 3.0 nSEC minimum input width, in time with the input pulse leading edge to inhibit. Capable of inhibiting a single pulse from a 300 MHz input pulse train.

Bin Gate:

Rear-panel slide switch enables or disables the slow bin gate via the rear connector. Signal levels are in accordance with the TID-20893 standard.

OUTPUT CHARACTERISTICS

General:

Five outputs per section, two pairs of negative bridged and one complemented NIM. The two pairs of bridged outputs are quiescently 0 mA and go to −32 mA during output. (−1.6 V into 50 ohms or −.8 V into 25 ohms) The complemented output is quiescently −16 mA going to 0 mA during output. Risetimes and falltimes are less than 1.0 nSEC, and output pulse shapes are optimized when the bridged outputs are 50 ohm terminated.

Width Control:

One control per section; 15-turn screwdriver adjustment. Outputs are continuously variable from 2 nSEC to 50 nSEC; better than 0.1%/°C stability.

Updating Operation:

The output pulse will be extended if a new input pulse occurs while the output is active. This provides deadtimeless operation and 100% duty cycle can be achieved.

GENERAL PERFORMANCE

Functions:

Logical AND, OR, majority logic, and logical fan-in/fan-out. All functions have leading edge inhibit with re-standardized outputs.

Resolving Time:

Timing of better than 200 pSEC can be achieved for any input combination. Stability is better than 10 pSEC/°C.

Rate:

300 MHz guaranteed minimum.

Double-Pulse Resolution:

Better than 3.3 nSEC, with output width set at minimum.

Input to Output Delay:

Less than 8.5 nSEC.

Power Supply Requirements:

− 6 V @ 400 mA	+ 6 V @ 225 mA
−12 V @ 160 mA	+12 V @ 0 mA
−24 V @ 80 mA	+24 V @ 45 mA

115 Vac @ 50 mA

NOTE: All currents within NIM specification limits allowing a full-powered bin to be operated without overloading.

Operating Temperature:

0°C to 70°C ambient.

Packaging:

Standard single width NIM module in accordance with TID-20893 and section 524.

Options:

Call Phillips Scientific to find out about available options.

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